

以 SGI 作為評估桃園中壢台地 地下水位變化趨勢探討

SGI As An Indicator To Assess Groundwater Level Variation In Taoyuan-Zhongli Tableland

亞洲大學 經營管理學系

副教授

蔡存孝

Tswn-Syau Tsay

摘 要

桃園中壢台地的礫石與砂土層為重要含水層，但因地下水年抽水量略高於主要來自降雨的補注量，具地層下陷風險。為此，沿海的大園、觀音等地已劃定為地下水管制區，實施抽水總量管制。本文目的為評估此管制措施下，2016 年至 2024 年間地下水位的變化趨勢，由於觀測井高程各異，各測站各分層觀測井地下水位也不同，因此，需要一個評估的標準作為地下水豐枯的依據。本文採用標準化地下水位指標(Standardised Groundwater Level Index, SGI)作為評估地下水豐枯的統一標準。SGI 分析結果顯示，研究區整體地下水情勢穩定，雖在 2017 年 4 月於部分觀測站出現局部匱乏，但並未發生大規模下降。自 2020 年後，地下水位更普遍呈現回升趨勢，證實地下水管制措施已見成效，有助於區域地下水資源的永續利用。

關鍵詞：標準化地下水位指標，桃園中壢台地，正態分數轉換

Abstract

To mitigate the risk of land subsidence caused by minor groundwater over-extraction on the Taoyuan-Zhongli Terrace, the government has designated groundwater control zones in coastal areas such as Dayuan and Guanyin. This study aims to evaluate the effectiveness of these control measures on the recovery of groundwater levels. We employed the Standardised Groundwater Level Index (SGI) to analyze observation well data from 2016 to 2024, assessing the spatio-temporal trends of groundwater levels. The results indicate that despite localized and transient depletion during the initial control period (e.g., in 2017), the overall water table did not deteriorate significantly. Notably, a widespread and sustained rising trend in groundwater levels has been observed across the study area since 2020. This study concludes that the implemented pumping restriction policies have been effective in stabilizing and restoring regional groundwater levels, successfully alleviating the pressure from over-extraction.

Keywords: SGI, Taoyuan-Zhongli Terrace, NST